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Hitachi Compute Rack 220S Getting Started Guide

FASTFIND LINKS

Getting Help
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Hitachi Data Systems

MK-90CRS001-01

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Preface

This document describes features, restrictions, and installation of the *Compute Rack 220S* (CR 220S).
Please read this document carefully, and maintain a copy for reference.

This preface includes the following information:

- ☐ Intended Audience
- ☐ Release Notes
- ☐ Referenced Documents
- ☐ Document Conventions
- ☐ Convention for storage capacity values
- ☐ Getting Help
- ☐ Comments

Notice: The use of Compute Rack and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

Intended Audience

This document is intended for the personnel who are involved in planning, managing, and performing the tasks to prepare your site for Compute Rack installation and to install the same.

This document assumes the following:

- The reader has a background in hardware installation of computer systems.
- The reader is familiar with the location where the Compute Rack will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

Release Notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document.

Referenced Documents

Compute Rack 220S (CR 220S) documents:

- Hitachi Compute Rack 220S User's Guide, MK-90CRS002
- Hitachi Compute Rack 220S CRU Replacement Guide, MK-90CRS003
- Hitachi Compute Rack 220S Windows Installation Guide, MK-90CRS005
- Hitachi Compute Rack 220S BIOS Guide, MK-90CRS000
- Hitachi Compute Rack 220S Remote Management User's Guide, MK-90CRS004
- Hitachi Compute Blade Series / Hitachi Compute Rack Series OS Installation Guide for Windows Server, MK-99COM076

Document Conventions

The term "Compute Rack" refers to all Compute Rack models, unless otherwise noted.

This document uses the following typographic conventions:

Convention	Description
Regular text bold	In text: keyboard key, parameter name, property name, hardware labels, hardware button, hardware switch. In a procedure: user interface item
Italic	Variable, emphasis, reference to document title, called-out term
`Screen text`	Command name and option, drive name, file name, folder name, directory name, code, file content, system and application output, user input
< > (angled brackets)	Variable (used when italic is not enough to identify variable).
[ ] (square bracket)	Optional values
{ } braces	Required or expected value
| vertical bar	Choice between two or more options or arguments
_(underline)	Default value, for example, [a | b]

Convention for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical storage capacity values (for example, logical device capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 KB	1,024 (2^{10}) bytes
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes

Getting Help

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support log on to the Hitachi Data Systems Portal for contact information: https://portal.hds.com.

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title and number including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation.

Thank you!

Safety guidelines

This section contains warnings and important safety guidelines for using a Hitachi Compute Rack System. Read and understand the information in this section before removing, replacing and installing system components.

This section includes the following key topics:

- Safety information
- Common precautions concerning safety
- General safety precautions
- Precautions against damage to equipment
- Safety and warning labels

Safety information

This document uses the following symbols to emphasize certain information.

Symbol	Label	Description
	WARNING	This indicates the presence of a potential risk that might cause death or severe injury.
	CAUTION	This indicates the presence of a potential risk that might cause relatively mild or moderate injury.
NOTICE	NOTICE	This indicates the presence of a potential risk that might cause severe damage to the equipment and/or damage to surrounding properties.
	Note	This indicates notes not directly related to injury or severe damage to equipment.
	Tip	This indicates advice on how to make the best use of the equipment.
	Fire Hazard	This warns fire hazard. Take appropriate precautions to prevent the risk of catching a fire.
	Electric Shock Hazard	This warns electric shock hazard. Failure to take appropriate precautions could result in serious injury or death.
	Hot Surface	Hot Surface indicates the risk of a serious burn by high temperature.
	Laser Hazard	This warns laser hazard. Failure to take appropriate precautions could result in invisible laser radiation.
	General Prohibition Sign	This indicates the general prohibition.
	Disassembly Prohibition Sign	This indicates not to allow customer to disassemble component.
	General Mandatory Sign	This indicates a general action to take. Action by following the instructions in this guide.
	Unplug Power cord	This indicates unplugging the power cable from the outlet to avoid electric shock and fire.

Common precautions concerning safety

Please carefully read through these safety instructions to follow:

- When operating the equipment, follow the instructions and procedures provided in the manual.
- Be sure to follow notes, cautionary statements and advice indicated on the equipment or in the manual.
- Referring to manuals attached to other products which you install in or connect to the equipment, follow the instructions described in those manuals.

Failure to follow those instructions can cause injury, fire or damage to property including the equipment.

General safety precautions

Handling of power cables

Always use the power cables shipped with the equipment, and follow the instructions below: Failure to follow the correct handling practices lead to damaging the power cables to expose the copper wires and to overheat due to short-circuiting or partial disconnection, which may cause electric shock or fire.

- Do not place any object on the power cables.
- Do not use the power cables near heat-generating appliances.
- Do not heat the power cables.
- Do not bundle the power cables.
- Do not subject the power cables to ultraviolet or strong visible light continuously.
- Keep the power cables from contact with alkali, acid, fat and oil, or humidity.
- Do not use the power cables in a high-temperature environment.
- Do not use the power cables above their specified rating.
- Do not use the power cables for other devices.
- Do not touch the power plug with moistened hands.
- Do not place any objects around the electrical outlets in order to allow users to quickly unplug the power cables.

Poor contact and tracking

Comply with the following instructions when handling the power plug. Otherwise, tracking or poor contact may cause overheating and a fire.

- Make sure that the power plug is fully and securely inserted into the electrical outlet.
- Before inserting the power plug, confirm that there is no dust or a water droplet on the plug. If any dust or water droplet is found, wipe it off with a dry cloth and then insert it.

Requirements for power outlets

- Use a grounding 2-pole plug-in power outlet. Outlets of any other types would cause an electric shock or fire.
- In order to prevent an electric shock, connect the outlet's grounding electrode to a grounding terminal installed by a qualified electrician. Without connection to the grounding terminal, an electric shock can occur in the event of a failure in power supply.

Plugging and unplugging

When inserting the power plug into the electrical outlet or removing it, be sure to hold the plug section. Do not pull the cable; it can partially break the wire, overheat the broken part and lead to a fire.

Power supply

Since the power supply has a high-voltage area in it, do not open the cover. If you do, it can result in an electric shock or equipment failure.

Installing power supply slot cover

When removing a power supply, do not insert your hand or tool inside the power slot. After removing a power supply, install a power slot cover. Inside the power slot, some conductors are exposed. If you touch them with your hand or tool, it may cause electric shock or equipment failure.

Abnormal heat, smoke, abnormal noise, or abnormal smell

Should you find anything abnormal occurring, turn off the power and unplug all the power cables of the equipment (maximum of 2) from the electrical outlets.

Do not repair, remodel or disassemble

Do not attempt to repair, remodel or disassemble the equipment on your own, except for performing expansion work in accordance with the instructions in this manual. Work performed by unqualified persons can lead to an electric shock, fire, or burns. Especially it is hazardous if you touch areas inside the high-voltage power unit.

Removal of the cover or bracket

Do not remove the cover or bracket. It can result in an electric shock, burns or equipment failure.

High temperature at a power supply

When a power supply is in operation, the cover and handle get hot. Be careful when replacing a failed module. You can get burned.

Adding and replacing parts

The cover and internal parts are hot immediately after the power is turned off. You must wait for about 10 minutes before adding or removing internal parts unless otherwise specified in this manual. If not, the hot equipment causes you to get burned.

Installing internal component and connecting peripherals

- When you remove a cover for removing and installing components or connect peripherals, disconnect all the AC cables from electrical outlets and disconnect all signal cables from the system unit unless otherwise specified.
  Otherwise, you get injury or electric shock. Also malfunction of the system unit might result.
- Use peripherals, internal components, signal cables, and AC cables that the manual describes as supported.
  Otherwise, compatibility issues might occur and malfunction of the peripherals, internal component, and the system unit. Also burn, smoke, or fire might occur.

Laser beam

- On this product, a Class 1 laser product is installed. Do not look directly at the laser beam. Do not look at the laser beam using an optical instrument.
- Under the laser module cover, a laser beam is being emitted. Do not remove the cover of an unused board.

Requirements for the product

Install the product on a fixed rack. Do not lean against the product or stand on it. Do not install the product in a place with weak floors and walls.
Do not subject the product to excessive vibration. That can drop and fall the product, leading to failure.

Installing the equipment in a rack

To install or remove the system equipment in or from the rack cabinet, always get help from at least one other person or use tools. If the system equipment has to be installed on 31U and above of the rack cabinet or it is already installed there, call for maintenance personnel instead of attempting to install or remove it. Defective installation may cause the system equipment to fall, resulting in injury or equipment failure.

Using a rack cabinet

When using a rack cabinet, do not place anything on the system unit mounted on the cabinet and do not use the top of the system unit mounted on the cabinet as a work bench. A heavy object placed on top of the system unit on the cabinet may fall, resulting in injury.

Locking the rail into place

Be sure to pull out the equipment until it locks into place. If not, the equipment may move unexpectedly, which causes you to get injured such as your finger caught in the gap.

Contact with metal edges

When moving the equipment or adding parts, take care not to hurt yourself on the metal or plastic edges. You can wear cotton gloves to protect your hands.

Improper battery type

CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

Handling of batteries

Since maintenance personnel should change batteries, do not change them yourself. Follow the instructions described below. Inappropriate handling can result in injury because the battery can overheat, burst, and catch fire.

- Do not put the battery on charge.
- Do not short out the battery.
- Do not disassemble the battery.

Storing batteries

When storing batteries, apply adhesive tape on the terminals for insulation. If the batteries are stored without insulation, the terminals can contact each other to cause a short-circuit and overheat or burst, leading to injury or fire.

Precautions against damage to equipment

Insertion of foreign objects into the equipment

Do not allow clips, pins or any other metal items or flammable items to enter the equipment through a vent or by any other means. Continuing to operate the equipment with foreign objects could cause failure.

Impact from falling

Do not fall the equipment or hit it against another object. It can cause internal deformation and deterioration. Operating the equipment under such defective conditions can cause failure.

Vent

A vent is used for preventing rise in temperature inside the equipment. Do not block the vent by placing or leaning an object. If you do, the temperature rises, which can cause failure. Check and clean ventilation holes periodically to keep the dust from gathering on them.

Contact with connection terminals

Do not touch connection terminals, such as a connector with your hand or any metal item. Do not insert any objects such as wire into them. Do not place the equipment in a place with metal pieces. If you do, a short circuit can be developed, causing equipment failure.

Moving between two locations with a temperature differential

When you move the equipment from one location to another, a significant temperature gap between the two locations may cause condensation on the surface or inside the equipment. Operating the equipment with condensation inside can cause a failure in equipment. Leave the equipment at the new location for several hours until the equipment temperature conforms to that of the new environment before you start using it. When you move the equipment from an environment with temperature 5 degrees Celsius to that with 25 degrees Celsius, for example, leave it for about two hours.

Adding and connecting to peripheral devices

Use only peripheral devices which are explicitly listed as supported in the manual, and always follow the instructions in the manual. Using devices other than those mentioned above would cause a failure in peripheral devices and equipment due to the difference in connection specifications.

Radio interference

When you install the equipment next to another electronic device, the radio waves may interfere with each other. In particular, a television set or a radio in the vicinity may make a noise.

Magnetism generator

Do not place a device that generates strong magnetism, such as a magnet or a speaker, near the equipment. Doing so can cause a system unit failure.

Handling HDD/SSD

An HDD/SSD is a precision instrument. Handle it carefully when you use it. Inappropriate handling could result in HDD/SSD failure.

Failed HDD/SSD

- If you attempt to replace failed HDD/SSD using an incorrect procedure or failed alternative disk, data on the disk array can be corrupted. Back up the data before replacing the drive.
- If you attempt to replace normal HDD/SSD, data on the disk array can be corrupted. Only replace the failed HDD/SSD.
- Replace the failed HDD/SSD with turning on the system unit. Otherwise, data on the disk array can be corrupted.

Static electricity

Discharge static electricity by touching metal door knob or wear cotton gloves whenever you handle a component. Otherwise, the device might fail.

Residual electric charge

When you change the configuration of the system unit (DIMM, fan, PCI card, or peripherals), disconnect all the power plugs and wait 30 seconds and more before the procedure. Otherwise, residual electric charge might cause malfunction.

Aluminum electrolytic capacitors

An aluminum electrolytic capacitor has a limited service life. Do not use it past its service life. Otherwise, leakage or depletion of the electrolyte may cause smoke or electric shock. To avoid such hazardous situations, replace limited-life parts once they are past their designated service life.

Distribution board

Install a distribution board close to an entrance/exit to protect the devices in your computer system and to serve as an emergency power breaker.

Signal cables

- Route cables not to trip over them. Tripping over cables could cause injury or failure of devices connected to the equipment, and also could cause loss of valuable data.
- Do not place heavy items on the cables. Avoid routing cables close to a thermal appliance. If you do, it could cause damage to cable sheaths, resulting in failure of the connected devices.

Before turning off the power

- Follow the prescribed procedure for power operation. Power input or output not according to the prescribed procedure may cause problems on the system equipment.
- Before turning off the power, confirm that all devices connected to the equipment stop. Turning off the power during operation of the equipment may cause equipment failure or data loss.
- When you are using an OS which requires the shut down procedure, be sure to finish the shut down procedure before turning off the power. Otherwise, data may be lost.

Rack Mount Safety Consideration

- Elevated Ambient Temperature

  If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the unit.

- Reduced Air Flow

  Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

- Mechanical Loading

  Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

- Circuit Overloading

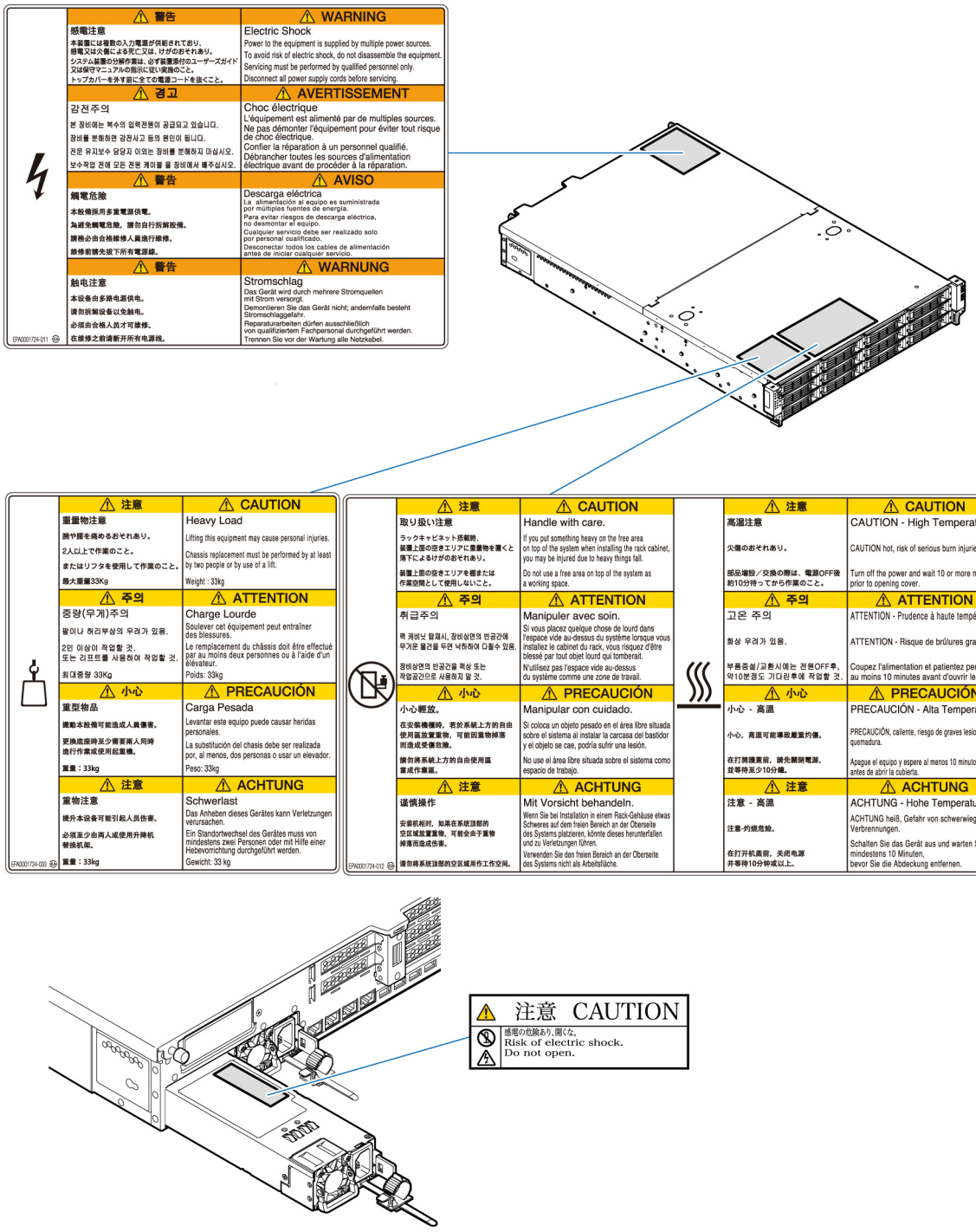
  Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

- Reliable Earthing

  Reliable earthing of rack-mounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

Safety and warning labels

The location and content of the warning and safety labels on the CR 220S are shown here.


⚠ 警告
感電注意
本装置には複数の入力電源が供給されており、感電又は火傷による死亡又は、けがのおそれあり。
システム装置の分解作業は、必ず装置添付のユーザーズガイド又は保守マニュアルの指示に従い実施のこと。
トップカバーを外す前にすべての電源コードを抜くこと。
⚠ 경고
감전주의
본 장비에는 복수의 입력전원이 공급되고 있습니다.
장비를 분해하면 감전사고 등의 원인이 됩니다.
전문 유지보수 담당자 이외는 장비를 분해하지 마십시오.
보수작업 전에 모든 전원 케이블 을 장비에서 배주십시오.
⚠ 警告
觸電危險
本設備採用多重電源供電。
為避免觸電危險，請勿自行拆解設備。
請務必由合格維修人員進行維修。
維修前請先拔下所有電源線。
⚠ 警告
触电注意
本设备由多路电源供电。
请勿拆卸设备以免触电。
必须由合格人员才可维修。
在维修之前请断开所有电源线。
EPA0001724-011
⚠ WARNING
Electric Shock
Power to the equipment is supplied by multiple power sources.
To avoid risk of electric shock, do not disassemble the equipment.
Servicing must be performed by qualified personnel only.
Disconnect all power supply cords before servicing.
⚠ AVERTISSEMENT
Choc électrique
L'équipement est alimenté par de multiples sources.
Ne pas démonter l'équipement pour éviter tout risque de choc électrique.
Confier la réparation à un personnel qualifié.
Débrancher toutes les sources d'alimentation électrique avant de procéder à la réparation.
⚠ AVISO
Descarga eléctrica
La alimentación al equipo es suministrada por múltiples fuentes de energía.
Para evitar riesgos de descarga eléctrica, no desmontar el equipo.
Cualquier servicio debe ser realizado solo por personal cualificado.
Desconectar todos los cables de alimentación antes de iniciar cualquier servicio.
⚠ WARNUNG
Stromschlag
Das Gerät wird durch mehrere Stromquellen mit Strom versorgt.
Demontieren Sie das Gerät nicht; andernfalls besteht Stromschlaggefahr.
Reparaturarbeiten dürfen ausschließlich von qualifiziertem Fachpersonal durchgeführt werden.
Trennen Sie vor der Wartung alle Netzkabel.
⚠ 注意
重量物注意
腕や腰を痛めるおそれあり。
2人以上で作業のこと。
またはリフタを使用して作業のこと。
最大重量33Kg
⚠ CAUTION
Heavy Load
Lifting this equipment may cause personal injuries.
Chassis replacement must be performed by at least by two people or by use of a lift.
Weight : 33kg
⚠ 주의
중량(무게)주의
팔이나 허리부상의 우려가 있음.
2인 이상이 작업할 것.
또는 리프트를 사용하여 작업할 것.
최대중량 33Kg
⚠ ATTENTION
Charge Lourde
Soulever cet équipement peut entraîner des blessures.
Le remplacement du châssis doit être effectué par au moins deux personnes ou à l'aide d'un élévateur.
Poids: 33kg
⚠ 小心
重型物品
搬動本設備可能造成人員傷害。
更換底座時至少需要兩人同時進行作業或使用起重機。
重量：33kg
⚠ PRECAUCIÓN
Carga Pesada
Levantar este equipo puede causar heridas personales.
La substitución del chasis debe ser realizada por, al menos, dos personas o usar un elevador.
Peso: 33kg
⚠ 注意
重物注意
提升本设备可能引起人员伤害。
必须至少由两人或使用升降机替换机架。
重量：33kg
⚠ ACHTUNG
Schwerlast
Das Anheben dieses Gerätes kann Verletzungen verursachen.
Ein Standortwechsel des Gerätes muss von mindestens zwei Personen oder mit Hilfe einer Hebevorrichtung durchgeführt werden.
Gewicht: 33 kg
EPA0001724-033
⚠ 注意
取り扱い注意
ラックキャビネット搭載時、装置上面の空きエリアに重量物を置くと落下によるけがのおそれあり。
装置上面の空きエリアを棚または作業空間として使用しないこと。
⚠ CAUTION
Handle with care.
If you put something heavy on the free area on top of the system when installing the rack cabinet, you may be injured due to heavy things fall.
Do not use a free area on top of the system as a working space.
⚠ 주의
취급주의
랙 캐비닛 탑재시, 장비상면의 빈공간에 무거운 물건을 두면 낙하하여 다칠수 있음.
장비상면의 빈공간을 적상 또는 작업공간으로 사용하지 말 것.
⚠ ATTENTION
Manipuler avec soin.
Si vous placez quelque chose de lourd dans l'espace vide au-dessus du système lorsque vous installez le cabinet du rack, vous risquez d'être blessé par tout objet lourd qui tomberait.
N'utilisez pas l'espace vide au-dessus du système comme une zone de travail.
⚠ 小心
小心輕放。
在安裝機櫃時，若於系統上方的自由使用區放置重物，可能因重物掉落而造成受傷危險。
請勿將系統上方的自由使用區當成作業區。
⚠ PRECAUCIÓN
Manipular con cuidado.
Si coloca un objeto pesado en el área libre situada sobre el sistema al instalar la carcasa del bastidor y el objeto se cae, podría sufrir una lesión.
No use el área libre situada sobre el sistema como espacio de trabajo.
⚠ 注意
谨慎操作
安装机柜时，如果在系统顶部的空区域放置重物，可能会由于重物掉落而造成伤害。
请勿将系统顶部的空区域用作工作空间。
⚠ ACHTUNG
Mit Vorsicht behandeln.
Wenn Sie bei Installation in einem Rack-Gehäuse etwas Schweres auf dem freien Bereich an der Oberseite des Systems platzieren, könnte dieses herunterfallen und zu Verletzungen führen.
Verwenden Sie den freien Bereich an der Oberseite des Systems nicht als Arbeitsfläche.
EPA0001724-012
⚠ 注意
高温注意
火傷のおそれあり。
部品増設／交換の際は、電源OFF後約10分待ってから作業のこと。
⚠ CAUTION
CAUTION - High Temperature
CAUTION hot, risk of serious burn injuries
Turn off the power and wait 10 or more minutes prior to opening cover.
⚠ 주의
고온 주의
화상 우려가 있음.
부품증설/교환시에는 전원OFF후, 약10분경도 기다린후에 작업할 것.
⚠ ATTENTION
ATTENTION - Prudence à haute température
ATTENTION - Risque de brûlures graves.
Coupez l'alimentation et patientez pendant au moins 10 minutes avant d'ouvrir le capot.
⚠ 小心
小心 - 高溫
小心，高溫可能導致嚴重灼傷。
在打開護蓋前，請先關閉電源，並等待至少10分鐘。
⚠ PRECAUCIÓN
PRECAUCIÓN - Alta Temperatura
PRECAUCIÓN, caliente, riesgo de graves lesiones por quemadura.
Apague el equipo y espere al menos 10 minutos antes de abrir la cubierta.
⚠ 注意
注意 - 高温
注意-灼烧危险。
在打开机盖前，关闭电源并等待10分钟或以上。
⚠ ACHTUNG
ACHTUNG - Hohe Temperaturen
ACHTUNG heiß, Gefahr von schwerwiegenden Verbrennungen.
Schalten Sie das Gerät aus und warten Sie mindestens 10 Minuten, bevor Sie die Abdeckung entfernen.
⚠ 注意 CAUTION
感電の危険あり、開くな。
Risk of electric shock.
Do not open.

1

Before installing

This chapter describes what you need to know before installing the system unit, for example, environmental requirements for installation, restrictions, and so on.

- ☐ Check at the delivery
- ☐ Environmental requirements for installation
- ☐ Restrictions
- ☐ Overview of Installation

Check at the delivery

This section describes what you need to check when the system unit is delivered.

Checking delivered items

After you unpack, go through the Check list for the delivered items to confirm all the items are delivered and no items are damaged. If you find any missing parts or any problems, contact the <sales partner>.

Environmental requirements for installation

For the detail of installation method for the system unit, see *Hitachi Compute Blade 2000/1000/320 and Hitachi Compute Rack 220/210 Site Planning Guide*.

Restrictions

This section describes restrictions regarding an operating environment of the system unit and peripherals and regarding how to use them.

Operating environment of the system unit and peripherals

- Use a genuine Hitachi rack mount kit and install the system unit in a Hitachi rack cabinet. Do not use the system unit without installing the system unit in a rack cabinet.
- In a hot or cold place, use an air conditioner for a while to stabilize the ambient temperature before using the system unit.
- Do not use the system unit in direct sunlight or near heat-generating devices such as stoves.
- Do not use the system unit in excessive dust.
- Do not use the system unit at extremely high or low temperature or in a place where the temperature changes rapidly.
  Do not use the system unit at extremely high humidity.
- If lightning occurs near the place where the system unit is used or the power from the electrical outlets is unstable, instantaneous power failure or voltage drop can occur, blacking out the display. When this situation happens, turn off the system unit and restart.

Handling of the system unit and peripherals

- If you turn off the power switch during system startup or while in operation, you may not be able to start up the system unit again. When this situation happens, contact the sales representative or talk to the maintenance personnel.
- If you install the system unit at the proximity of other electronic devices, interference may occur. Especially when a TV set or a radio is nearby, electrical noise can be generated. When this situation happens, do the following.
  - Put the TV set or the radio away from the system unit.
  - Change the direction of the antenna of the TV set or the radio.
  - Use different electrical outlets.
- A mouse is susceptible to exogenous electrical noise. When mouse malfunction occurs, we recommend getting power for the system unit and power for peripherals from the same OA tap with noise filter.
- If foreign or other objects get inside an optical sensor of a mouse, remove the objects. If this situation happens, a mouse cursor may not move smoothly.
- "Wait more than 10 seconds to turn on the system unit after turning off the system unit. If the AC supply to the system unit is shut down (for example, a circuit breaker at a switchboard is shut off or AC power from the UPS is shut off by a scheduling function of UPS), wait at least 30 seconds. For each case, the system unit may not start up, if you turn on the system unit earlier.
- For information about how to turn off the power, see Powering off system unit and follow the instruction."
- If the system unit is used in a room with carpets or you use, for example, a lap robe during operation of the system unit, static electricity can be generated depending on the type of the material and can affect the system unit and peripherals. Use the ones made of material that does not generate too much static electricity.
- Make sure the system unit does not hit anything when you move the system unit.
- The system unit and its internal devices need periodical maintenance. See *User's Guide* and *Appendix A Maintenance and supplies* and follow the instruction for maintenance.
- During system startup, do not perform keyboard reset by pressing (Ctrl + Alt + Delete). System error occurs.
- When you connect a USB device to the system unit, it may not be recognized by the operating system (OS) because of loose connection.
  In this case, remove and connect again a USB device.

- The noise level of this system unit is 55 dB or less.
  We recommend installing the system unit in a dedicated room. You may feel the noise annoying depending on the installation environment or location. If you install the system unit in an office room, be careful enough to the environment and location.
  The noise level of the equipment is measured in accordance with ISO 7779 standard (Environment temperature is 15 degrees Celsius or less / Position of measurement is 100 cm apart from the front of the equipment and at the height of 150 cm).
  Note that the rotational speed of the fans is controlled by the temperature inside the system unit. If the maximum load continues for an extended amount of time at high temperature, or one of the fans gets out of order, the noise level may exceed this standard level. Note also that on startup or reboot, the fans run at full speed and the noise level may exceed this standard level.

Electrical outlets

- Use only 100-120 VAC or 200-240 VAC as the power supply. Use electrical power plugs and electrical outlets that meet respective specifications.
- An electric outlet has Line (L), Neutral (N), and Ground (G) conductors. Before using the electric outlet, confirm the Neutral and the Ground have the same electrical potential.

Do not connect both types of power sources, 100 VAC and 200 VAC to the system unit at the same time. The system unit does not support AC power supply at different multiple voltages.

Overview of Installation

This section describes precautions to be taken when you setup and also describes how to Installation.

Precautions

- Read Safety guidelines carefully before setup and be careful enough to safety when you installation.
- Read manuals other than this manual those are bundled with the system unit and peripherals. Make sure you fully understand the steps and process before installation.
- If any specific instructions are given in other manuals in addition to what is explained in this manual, follow those instructions during installation.
- If you experience any troubles during installation, contact the sales representative or talk to the maintenance personnel.

Installation procedure

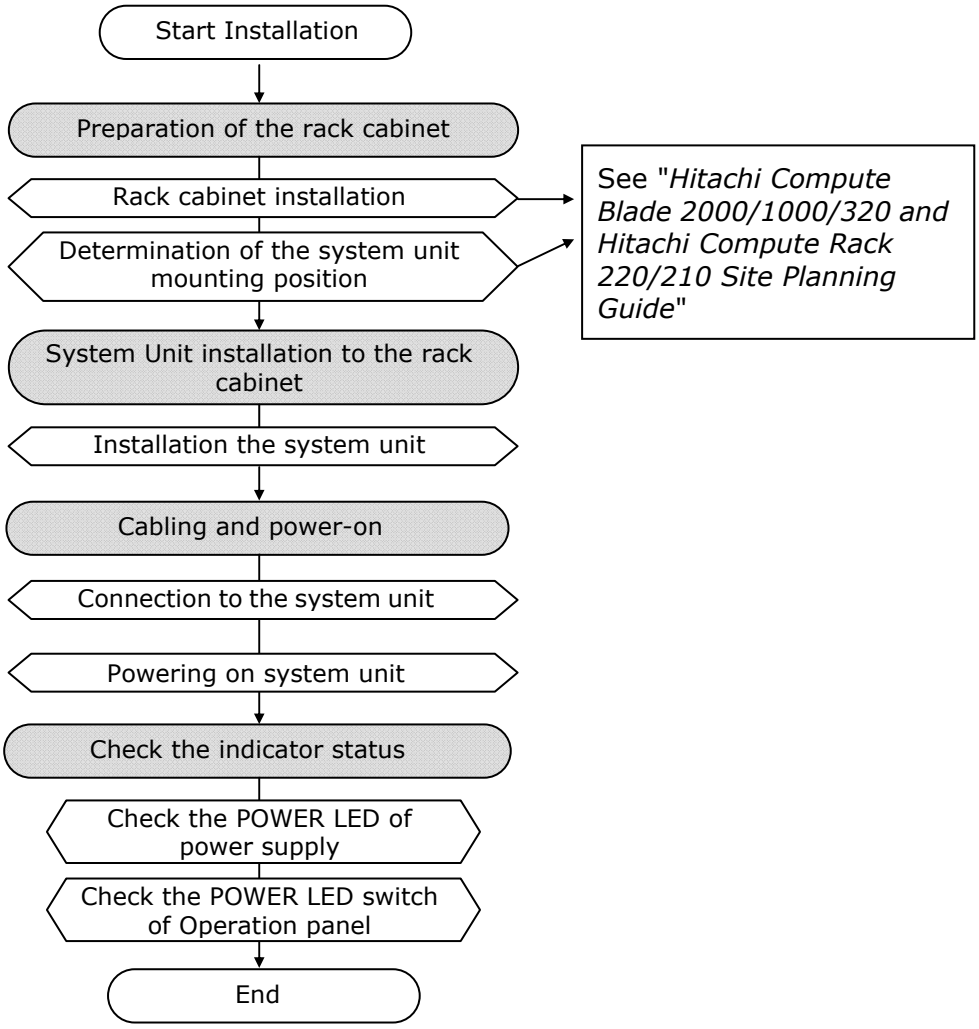

Start Installation
Preparation of the rack cabinet
Rack cabinet installation
Determination of the system unit mounting position
See "*Hitachi Compute Blade 2000/1000/320 and Hitachi Compute Rack 220/210 Site Planning Guide*"
System Unit installation to the rack cabinet
Installation the system unit
Cabling and power-on
Connection to the system unit
Powering on system unit
Check the indicator status
Check the POWER LED of power supply
Check the POWER LED switch of Operation panel
End

Figure 1-1: Installation procedure

2

Overview

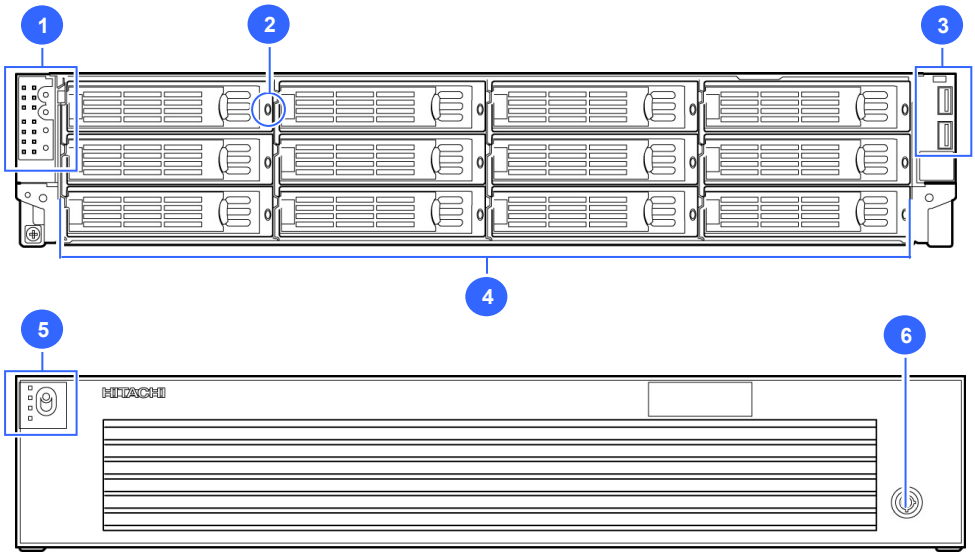
This chapter describes the names of the components of the system unit and how to use basic functions.

- ☐ Name of each component and its functions

Name of each component and its functions

This section describes the name of each component and its functions.

Front side



With Front bezel (AU7706-Y/AU7706-R)

Figure 2-1: CR 220S front side Overview

Table 2-1: CR 220S front side components

Location	Name	State	Description
1	**Operation panel**	**-**	The operation panel has switches to control the system unit and LEDs for the status of the system unit. See Operation panel on page 2-3
2	**HDD status LED**	**Green-On**	Accessing HDD.
		Amber-On	Error occurred.
		Amber-Blink[1]	On-going data rebuild.
3	**USB connectors (front side)**	**-**	USB devices can be connected.
4	**Extension storage bays (3.5-inch) 1-12**[2]	**-**	An internal HDD (3.5-inch) can be installed to an extension storage bay (3.5-inch).
5	**Bezel indicator**	**-**	Indicates the LEDs on the operation panel by lenses. See Operation panel on page 2-3
6	**Bezel lock**	**-**	Locking the Front bezel by the lock key.

Notes:

1 The LED lights green while the HDD is being accessed for rebuilding.

2 A dummy tray is installed for an extension bay without an internal HDD.

Operation panel

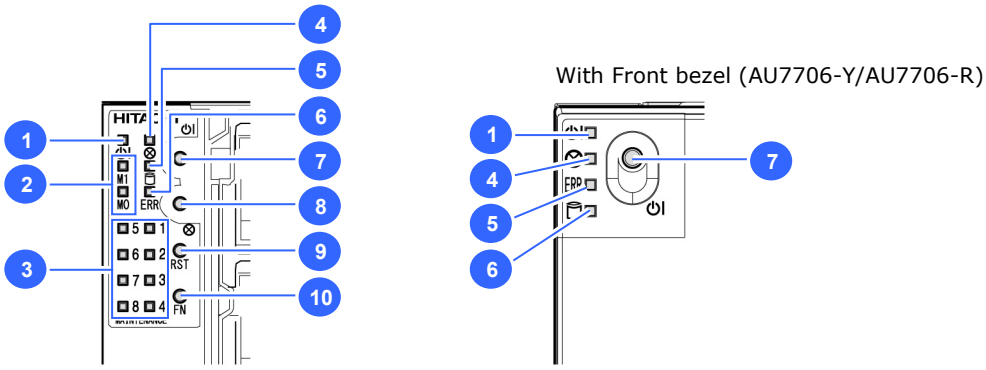


Figure 2-2: CR 220S Operation panel overview

Table 2-2: Operation panel switches, indicators and connectors

Location	Name	State	Description
1	**POWER LED**	**Green-On**	The POWER LED is turned on when the system unit is turned on by pressing the POWER switch.
2	**MODE1 LED**	**Green-On**	The lower LED is MODE0 and the upper one is MODE1. According to the lighting state of these two LEDs and the SERVICE LED, the information displayed on MAINTENANCE LEDs will differ.
	MODE0 LED	**Green-On**	
3	**MAINTENANCE LEDs**	**Green-On**	Indicating the operation status of the system unit.
4	**SERVICE LED**	**Blue-On**	The SERVICE LED turns on when a SERVICE switch either on the front side or the rear side is pressed.
5	**ACCESS LED**	**Green-On**	Accessing HDD/SSD.
6	**ERROR LED**	**Amber-On**	HDD errors, fan errors, power supply errors, or other hardware errors occur.
7	**POWER switch**	-	Press the POWER switch to turn on/off the system unit. If you press the power switch continuously for 4 seconds or more, you can forcibly turn off the system unit.
8	**SERVICE switch**	-	Press the SERVICE switch to turn on/off the SERVICE LED.
9	**RESET switch**	-	Press this button to perform hard reset (restart) on the system unit. If you need to press the switch, use, for example, a ballpoint pen to press the switch.
10	**FUNCTION switch**	-	Not for use. Do not press this switch.

MAINTENANCE LEDs

MAINTENANCE LEDs can display the event code, the POST code or the power consumption, and you can select what to display on it by using the SERVICE switch.
A combination of ON/OFF selections of MODE0 LED, MODE1 LED, and SERVICE LED determines what is currently displayed.
A combination of ON/OFF selections of MODE0 LED, MODE1 LED, and the SERVICE LED determines what the MAINTENANCE LEDs indicate as follows:

Table 2-3: What the MAINTENANCE LEDs indicate

SERVICE LED	MODE0 LED	MODE1 LED	What the MAINTENANCE LEDs indicate
Off	**Off**	**Off**	Event code
On	**Off**	**On**	POST code
Off	**On**	**On**	Power consumption

- Event code

  The operation status of the system unit is displayed. Under normal operation, all LEDs are OFF. If an error occurs, the LED corresponding to the component where the error occurred is turned on.

Table 2-4: Event code indicate

MAINTENANCE LED	Where the error occurred
1	CPUs
2	Memory
3	Motherboard
4	PCI
5	Power / Voltage
6	Fans
7	Temperature
8	Other hardware
All off	Normal operation

- POST code

  POST code of the system BIOS is displayed.
  All codes have two digits, and each digit is a four-bit data in binary.
  Upper digit is displayed with the four LEDs from 1 to 4, and lower one displayed on the LEDs 5 to 8.
  If Power On Self Test (POST) is successful, LEDs 1, 3, 5, 6, and 7 are turned on, and the POST code is "AE" in this case.

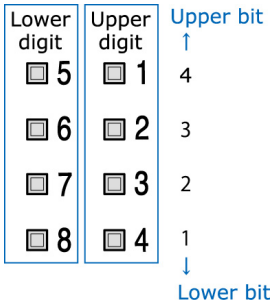


Figure 2-3: POST code indicate

The MAINTENANCE LEDs keep the data of the POST code and the event code unless the AC power source is turned off. When the power of the system unit is turned on, the display gets cleared.

- Power consumption

  The rough estimate of the current power consumption of the system unit (W) is displayed.
  The numbers of turned-on MAINTENANCE LEDs indicate the power consumption, as follows:

Table 2-5: Power consumption indicate

MAINTENANCE LED	Power consumption
All Off	Less than 200 W
Only 1 is On	200 W or more and less than 250 W
1 and 2 are On	250 W or more and less than 300 W
1 through 3 are On	300 W or more and less than 350 W
1 through 4 are On	350 W or more and less than 400 W
1 through 5 are On	400 W or more and less than 450 W
1 through 6 are On	450 W or more and less than 500 W
1 through 7 are On	500 W or more and less than 550 W
1 through 8 are On	550 W or more

Tip The indicated power consumption value is not accurate. Use this value as a just reference.

SERVICE switch

The SERVICE switch is used to switch what to display on the MAINTENANCE LEDs. Also the SERVICE switch is used to turn on the SERVICE LED. SERVICE LED is used as one of the information to show what kind of code is now on MAINTENANCE LEDs.
The ON/OFF status of this switch does not affect the operation of the system. Every time you press the SERVICE switch, the MAINTENANCE LEDs will change the code to display as follows.

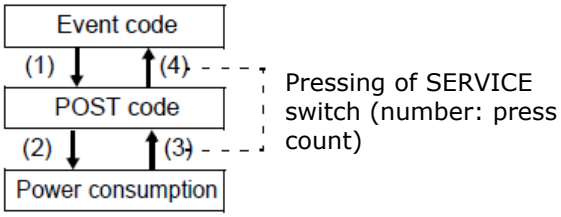


Figure 2-4: MAINTENANCE LEDs indicate pressing of SERVICE switch

Note When you intend to press a SERVICE switch, be careful not to press the POWER switch. The system will be shut down if the POWER switch is pressed.

Tip When an AC cable is connected and the system unit gets supplied with AC power, both SERVICE LEDs on the front side and on the rear side of the system unit blink for about 60 seconds. During this period, the MAINTENANCE LEDs are turned off.
The system unit doesn't start unless the SERVICE LEDs finish blinking. So you will have to wait the system to start until the LEDs finish blinking if you press the POWER switch while the SERVICE LEDs are still blinking.

FUNCTION switch

Note Do not press the FUNCTION switch and the SERVICE switch at the same time. NMI is issued and the system will be forcibly shut down.

Tip If you press the FUNCTION switch continuously for 10 seconds or more while the management interface is not connected to LAN, the system unit gets into the BMC maintenance mode and the ERROR LED will blink. BMC maintenance mode is used during maintenance work. Avoid this operation. When into this mode, you can release the system unit from the BMC maintenance mode by pressing the FUNCTION switch continuously for 10 seconds or more using, for example, a ballpoint pen. When BMC maintenance mode is canceled, the ERROR LED stops blinking.

Rear side

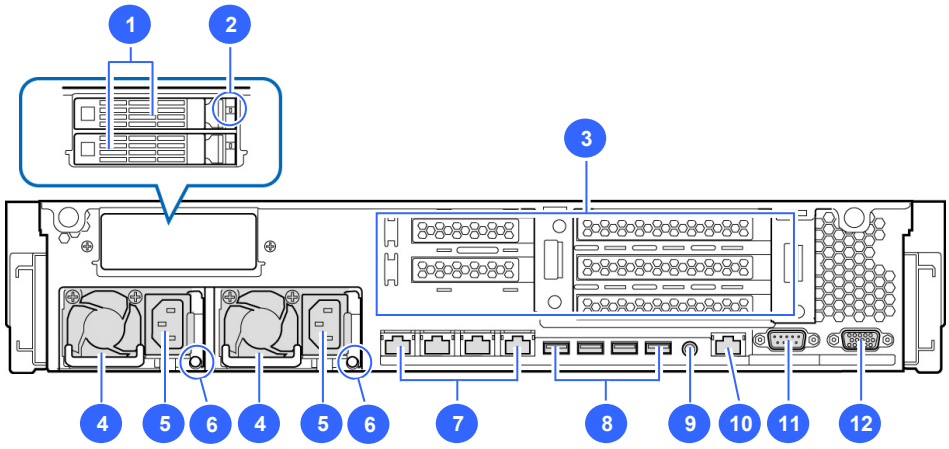


Figure 2-5: CR 220S rear side overview

Table 2-6: CR 220S rear side components

Location	Name	State	Description
1	**Extension storage bays (2.5-inch) 13, 14 (optional)[1]**	**-**	If you install an optional Rear HDD kit (ES7623-Y/ES7623-R), you can add two extension storage bays (2.5-inch).
2	**HDD status LED (optional)**	**Green-On**	Accessing HDD.
		Amber-On	Error occurred.
		Amber-Blink[2]	On-going data rebuild.
3	**PCI slots**	**-**	A PCI Express board can be installed to a PCI slot (PCI).
4	**Power supply slots**	**-**	A power supply can be installed to a power supply slot. The slot numbers are 1, 2 from left to right.
5	**AC connector**	**-**	Connect an AC cable to the AC connector.
6	**Power supply LED**	**Green-Blink**	AC power is supplied / Stand-by state (AC cable is connected, POWER switch is OFF)
		Green-On	Power is ON / Normal operation (POWER switch is ON)
		Amber-Blink	Warning status (over-temperature)
		Amber-On	Errors occurred (Failure, AC cable has been disconnected, or other reason)
7	**Network interface connectors 1-4**	**-**	Connectors to connect LAN cables. Network interface connector numbers are 1 to 4 from right to left.
8	**USB connectors (rear side)**	**-**	Connect a keyboard and a mouse. You can also connect USB devices.
9	**SERVICE switch with SERVICE LED**	**Blue-On**	The SERVICE LED turns on when a SERVICE switch either on the front side or the rear side is pressed.

Location	Name	State	Description
10	**Management interface connector**	**-**	Connect the management interface connector to a system console terminal using a LAN cable when you use the remote management function. For the details of the remote management function, see *Remote Management User's Guide*.
11	**Serial interface connector (COM0)**	**-**	You can use this connector to connect a device such as a modem that uses a serial interface.
12	**VGA connector**	**-**	Connect a computer display to the VGA connector.
Notes: 1 A dummy tray is installed for an extension bay without an internal HDD. 2 The LED lights green while the HDD is being accessed for rebuilding.			

In the USB connectors (rear side), 2 (left side) of 4 port feeds +5V unless the AC power source is turned off.

PCI slots

The slot numbers are as follows.

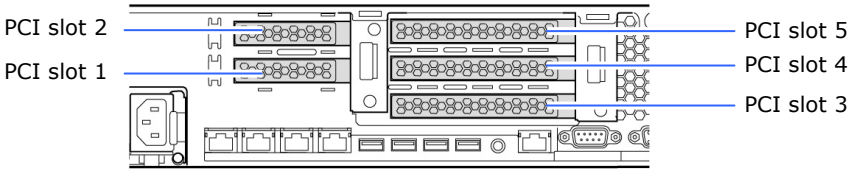


Figure 2-6: Location of PCI slot

The specifications for the PCI slots are as follows.

Table 2-7: PCI slots specification

Slot	Specification
1	PCI Express 2.0 x 1 (1 lanes)[1] / Low profile
2	PCI Express 2.0 x 4 (4 lanes)[2] / Low profile
3	PCI Express 3.0 x 4 (4 lanes)[2]
4	
5	PCI Express 3.0 x 8 (8 lanes)
Notes: 1 The shape of connector is x 4 (4 lanes). 2 The shape of connector is x 8 (8 lanes).	

Network interface connectors 1, 2, 3, 4

The status LEDs on the connector are explained as follows.

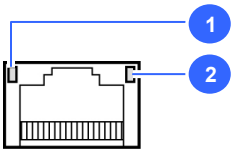


Figure 2-7: Network interface connectors status LED

Table 2-8: Network interface connectors status LED indicate

Location	Name	State	Description
1	Activity LED	Green-On	A link with a hub has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a hub has not been established.
2	Link LED	Amber-On*	A 1000BASE-T link with a hub has been established.
		Green-On*	A 100BASE-TX link with a hub has been established.
		Amber-Blink	A 1000BASE-T link with a hub is being established.
		Green-Blink	A 100BASE-TX or 10BASE-T link with a hub is being established.
		Off	A 10BASE-T link with a hub has been established or link with a hub has not been established. The Activity LED shows either case.
* AC power is still supplied even if the power of the system unit is turned off, but this LED will be turned off because only link by 10BASE-T can be established.			

- Onboard LAN controllers (network interfaces) displayed by the device manager are as follows:
  - Onboard LAN1: PCI bus 6, device 0, function 0
  - Onboard LAN2: PCI bus 6, device 0, function 1
  - Onboard LAN3: PCI bus 6, device 0, function 2
  - Onboard LAN4: PCI bus 6, device 0, function 3
- The number of the network adapter which is the network interface connector recognized by the device manager may not match to the network interface connector number.

Management interface connector

The status LEDs on the connector are explained as follows.

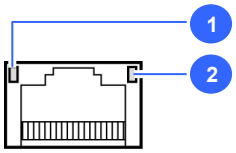


Figure 2-8: Management interface connector status LED

Table 2-9: Management interface connector status LED indicate

Location	Name	State	Description
1	Activity LED	Green-On	A link with a hub has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a hub has not been established.
2	Link LED	Green-On	A 100BASE-TX link with a hub has been established.
		Green-Blink	A 100BASE-TX or 10BASE-T link with a hub is being established.
		Off	A 10BASE-T link with a hub has been established or link with a hub has not been established.

Note

Do not directly connect between the management interface connector and a network interface connector 1 to 4 using a LAN cable. If you do, the system unit does not work properly.

Tip

- The link speed and duplex of the management interface are specified to auto-negotiation. Therefore, also specify auto-negotiation to the LAN ports both of a console, terminal and a switching hub which connected to the management interface.
- We recommend you use the management interface at 100BASE-TX. If the links speed of the management interface is 10 Mbps (10BASE-T link established, the Link LED is OFF), malfunction may occur in communication. In this case you need to reconfigure the network connected to the management interface.
- If you find the communication is unstable, turn off the system unit, shut down the AC power by, for example, disconnecting the AC cable, wait 30 seconds or more, and then reconnect AC power and turn on the system unit.

3

Installation

This chapter describes how to install the system unit and how to connect peripherals to the system unit.

- ☐ Installing the rack cabinet
- ☐ Installing the system unit
- ☐ Installing / removing a front bezel
- ☐ Connecting to the system unit
- ☐ Removing the system unit

Installing the rack cabinet

For the detail of installation method for the rack cabinet, *see Hitachi Compute Blade 2000/1000/320 and Hitachi Compute Rack 220/210 Site Planning Guide*.

For more information about the rack cabinet, see Rack cabinet user's manual bundled with the rack cabinet.

Installing the system unit

This section describes how to install the system unit in a rack cabinet.

Installing the rack rail

When you mount the system unit to the rack cabinet, use the rack rails provided for exclusive use with the system unit. Use a Hitachi rack cabinet or an EIA standard rack.

The following describes the procedure to install the rack rails in a rack cabinet.

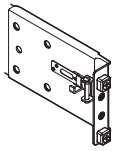
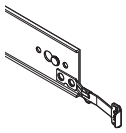
1. Slide out the inner rail from outer rail while pressing the button on the inner rail until the inner rail stops.

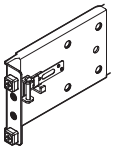
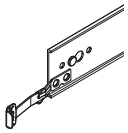
   Then the inner rail is locked by lock latch (White).
2. Further slide out the inner rail while pulling the lock latch (White) and disengage the inner rail.

Note When you disengage the inner rail while pressing the lock latch (White), you need to pull the inner rail with a lot of force because the rail is tight. Be careful to the surroundings and make sure you do not hit anything.

Tip

- The rack rails have a distinction of right and left as follows:
  - Left side (towards front of the system unit)

    
    Outer rail
    Stamp "L" and arrow.
    
    Inner rail
    Stamp "LEFT".
  - Right side (towards front of the system unit)

    
    Outer rail
    Stamp "R" and arrow.
    
    Inner rail
    Stamp "RIGHT".
- One step of the outer rail slides.
  In the whole rack rail, two steps slide including one step of slide of the inner rail.

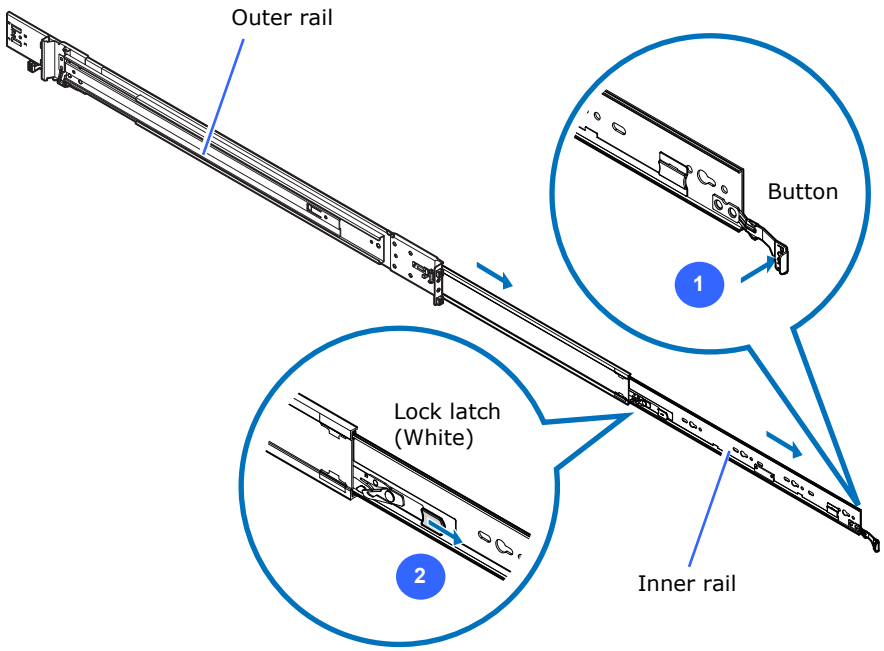


Figure 3-1: Disengage the inner rail from the outer rail

3. Slide the outer rail back while lifting the lock lever.

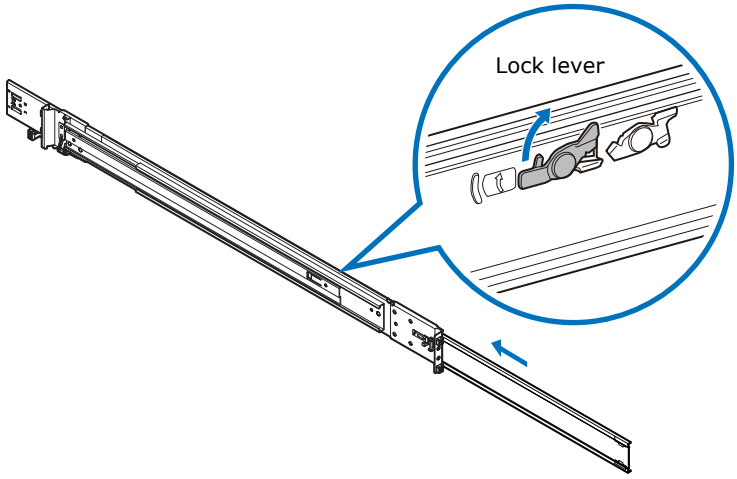


Figure 3-2: Slide back the outer rail

4. Align the guide at the front of the outer rail with the guide hole at the front of the rack cabinet and lock the guide into the hole.

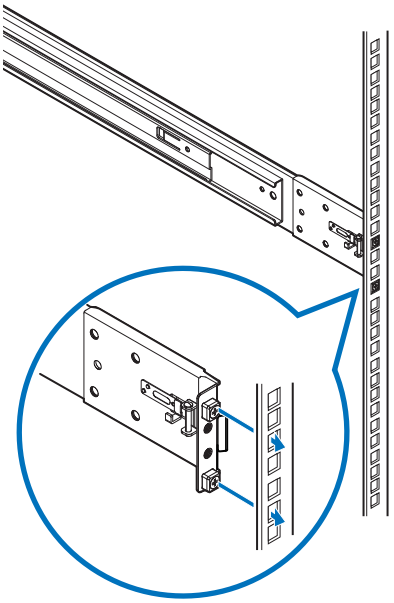


Figure 3-3: Guide of the outer rail into hole at front of the rack cabinet

5. Release the lock lever at the rear of the outer rail, align the guide with the guide hole at the rear of the rack cabinet.
6. Lock the guide into the hole, and engage the lock lever to fix the outer rail to the rack cabinet.

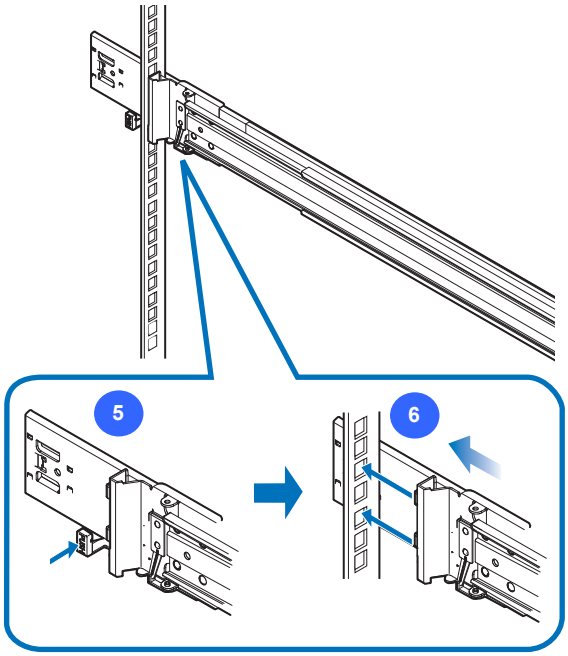


Figure 3-4: Lock the outer rail in the rack cabinet

7. Repeat with the other outer rail.

Mounting the system unit to the rack cabinet

The following describes the procedure to mount the system unit to the rack cabinet.

1. Align the hole of the inner rails to the tabs of the system unit.
   And then, put and slide the inner rails toward the rear of the system unit.

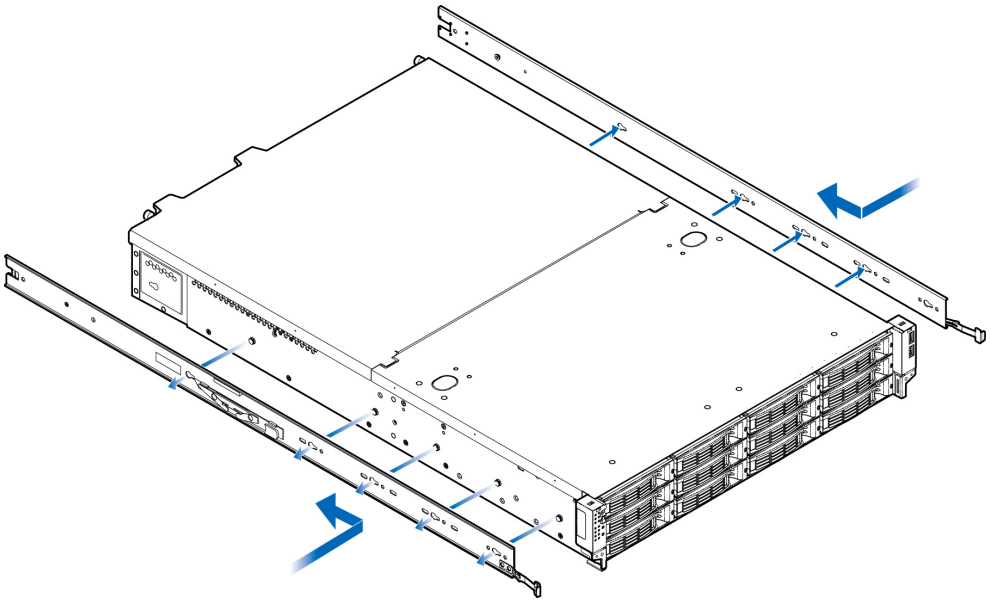


Figure 3-5: Put the inner rails to the system unit

2. Align the inner rails on either side of the system unit with the outer rails.

> Tip: Slightly slide in one inner rail first, and then try the other inner rail.

3. Slide the inner rails into the outer rails until the inner rails stop and are locked by lock latches (White).

> Note: When you slide the system unit into the rack cabinet, be careful against being caught the cable clamp of the power supply. The cable clamps may be damaged.

4. Pull the lock latches (Blue) and slide the inner rails all the way into the rack cabinet.

   Then the inner rails are locked by the buttons.

> Note:
> - Slide in the system unit gently. Lift the front of the system unit slightly when sliding the system unit into the rack cabinet. Otherwise, the system unit can interfere with another unit installed below, which may cause those units to be deformed.

- When you slide in the system unit, you need to push the system unit with a lot of force because the rail is tight.
  Be careful to the surroundings and make sure you do not hit anything.
- Do not push down the system unit while sliding out the system unit. If you do, the system unit may be deformed.
- The inner rails are not locked by the buttons when making the right and left of the outer rails reverse and having attached to the rack cabinet. Remove and re-attach correctly the outer rails to the rack cabinet. For remove procedures, see Removing the system unit.

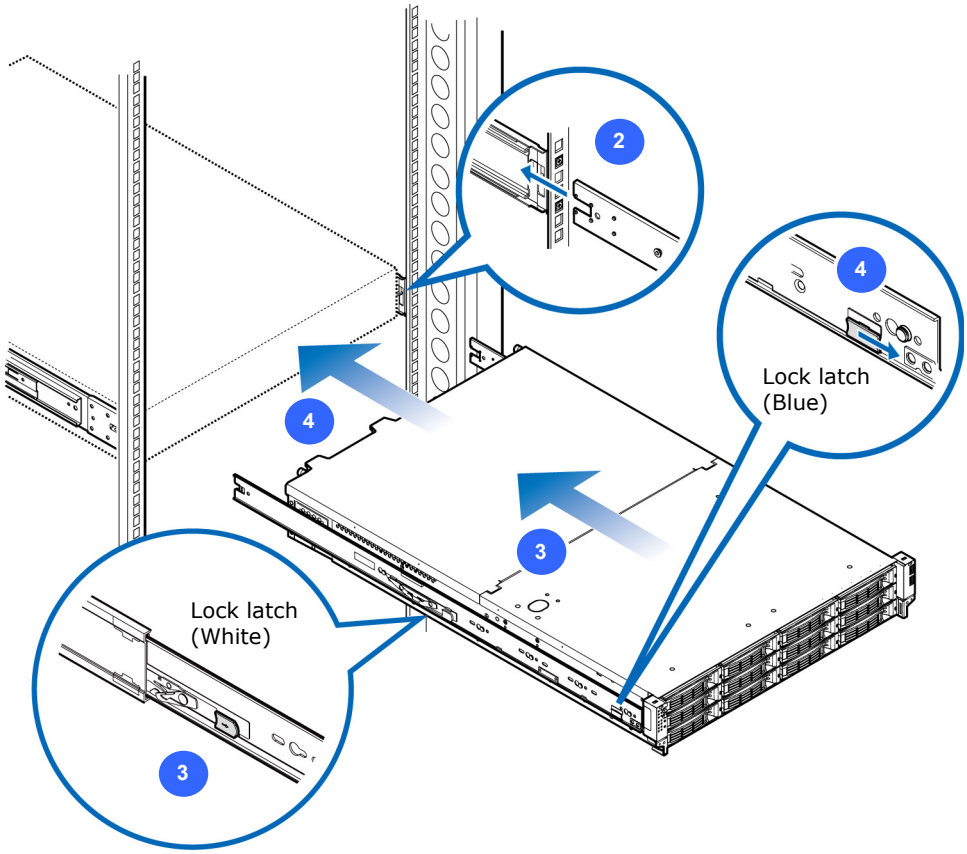


Figure 3-6: Mounting the system unit to the rack cabinet

Installing/removing a front bezel

This section describes how to install/remove a front bezel.

A front bezel (AU7706-Y/AU7706-R) is an optional product. Only when you purchase a front bezel separately, the front bezel is delivered in a separate package.

NOTICE Do not auto eject or remote eject the disc while a front bezel is attached or the front door of the rack cabinet is closed. Do not attach a front bezel or close the front door of the rack cabinet while the tray is open.

The tray can interfere with the front bezel or the front door and can cause a failure.

Installing a mounting bracket

Fix the mounting brackets with two screws to both the front tabs of the system unit.

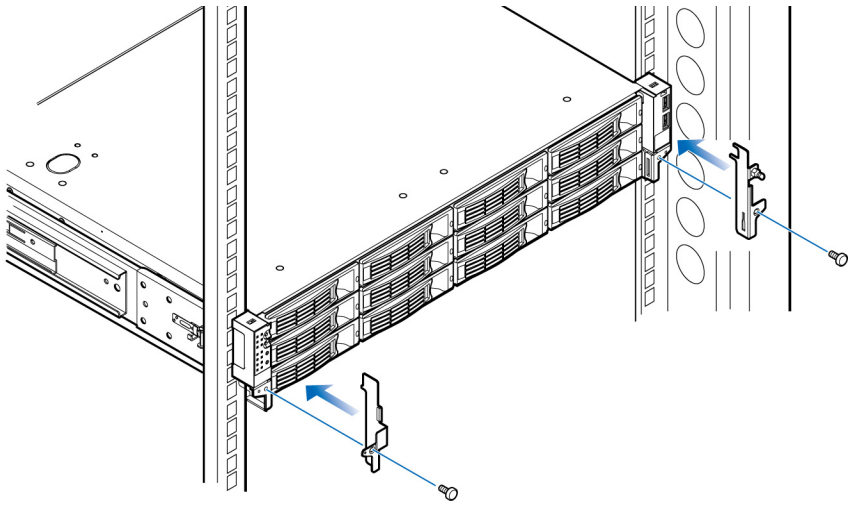


Figure 3-7: Fixing mounting bracket

Installing a front bezel

1. Hook the tab inside the front bezel to the guide on the left side mounting bracket.
2. Push in the other side of the front bezel all the way.
3. After pushing in, lock the front bezel with the bezel key.

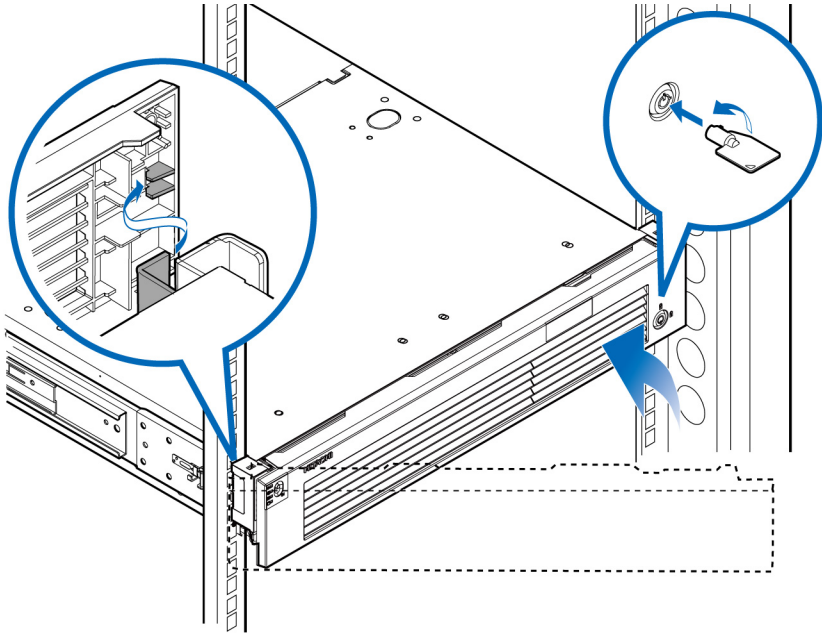


Figure 3-8: Installing the front bezel

A bezel key is fixed with adhesive tape inside the front bezel.

Removing a front bezel

Reverse the Installing a front bezel procedure.

Connecting to the system unit

This chapter describes how to connect peripherals to the system unit.

Computer display, keyboard, and mouse

Connect the computer display to the VGA connector on the rear side of the system unit using a display interface cable. Connect a keyboard and a mouse to the USB connectors (rear side). Then connect the power plug of the computer display to the electrical outlet box inside the rack cabinet or an uninterruptible power supply (UPS).

Tip

At the first startup after you change the configuration of the system unit, Windows loads new drivers and sets up new services. Because the USB driver is not loaded during this period, you cannot temporarily use a keyboard and a mouse for input.

If you changed the configuration of the system unit, wait one or two minutes after startup and then use the keyboard or mouse for input.

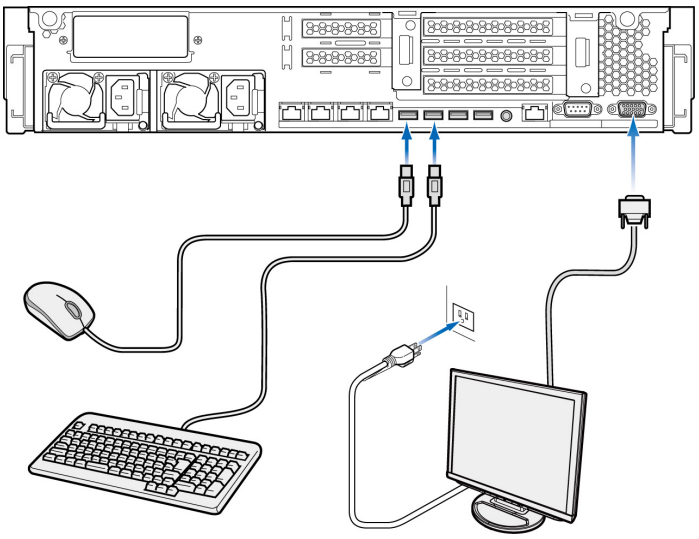


Figure 3-9: Connecting display, keyboard, and mouse

AC cable

Connect an AC cable to the AC connector of the system unit.
If you use an AC cable for 100 VAC, you need a 100VAC grounded two-pole electrical outlet with a ground terminal.
If you use an AC cable for 200 VAC, you need a 200VAC grounded two-pole electrical outlet with a ground terminal.
Connect the AC cable to the electrical outlet box inside the rack cabinet or an uninterruptible power supply (UPS).

If you connect AC cables to a UPS, see Uninterruptible power supply (UPS) on page 3-12.

- Do not connect both types of power sources, 100 VAC and 200 VAC to the system unit at the same time. The system unit does not support AC power supply at different multiple voltages.
- If you pull out a power plug from the system unit or an electrical outlet, wait 30 seconds or more and then reconnect a power plug. Otherwise the system unit may not start up.

- If an optional power supply (BP2361-Y/BP2361-R) is installed to achieve redundant configuration, you need two AC cables.
- When an AC cable is connected and the system unit gets supplied with AC power, both SERVICE LEDs on the front side and the rear side of the system blinks for about 60 seconds. During this period, the MAINTENANCE LEDs are turned off.
  If you press the POWER switch while the SERVICE LEDs are blinking, you have to wait until the blink end to start the system unit.
- When AC cables are connected and the system unit gets into stand-by mode, the fans inside the power supplies start running.

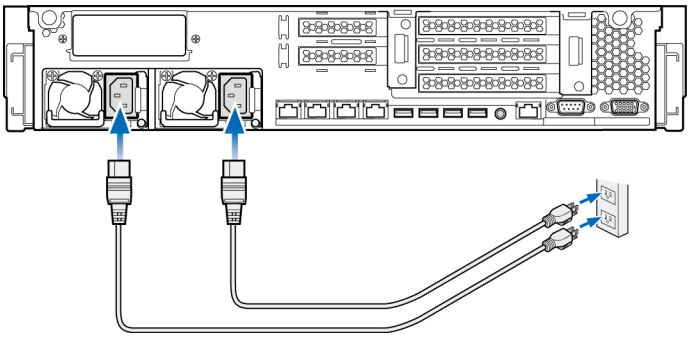


Figure 3-10: Connecting AC cable

After you connect an AC cable to the system unit, fix the AC cable using a cable clamp attached to the power supply in order to avoid disconnection. After the AC cable is fixed, push the cable clamp toward the power plug all the way.

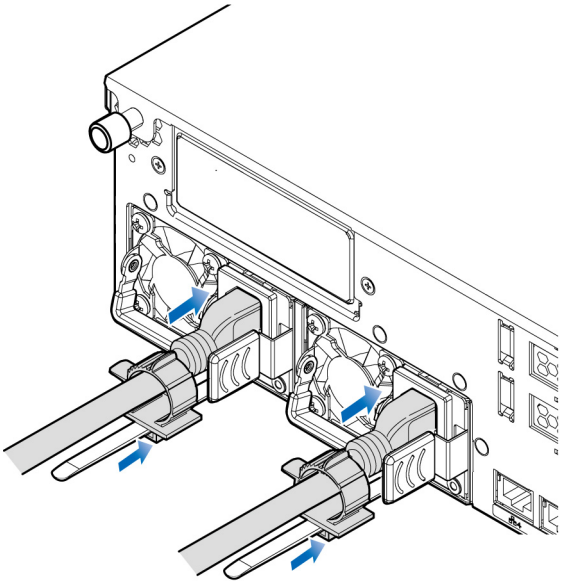


Figure 3-11: Fix AC cable using the cable clamp

Uninterruptible power supply (UPS)

An uninterruptible power supply (UPS) supplies AC power when a power failure occurs or a circuit breaker is shut off, stopping AC power for the system unit.

The UPS you use has to accommodate the type of AC cable used for the system unit. The UPS also has to support the OS used in the system unit.

For information about hardware settings of a UPS, see the manual of the UPS.

If you use a UPS, the system unit will not automatically start even when AC power is resumed after shutdown caused by a power failure or other reason.
In order for the system unit to automatically start, you need UPS management software. For details, contact the sales representative.
You also need to change the settings of the system BIOS **Restore AC Power Loss** to Power On. See *Hitachi Compute Rack 220S BIOS Guide*.

If you install a power supply (BP2361-Y/BP2361-R), you need two AC cables.

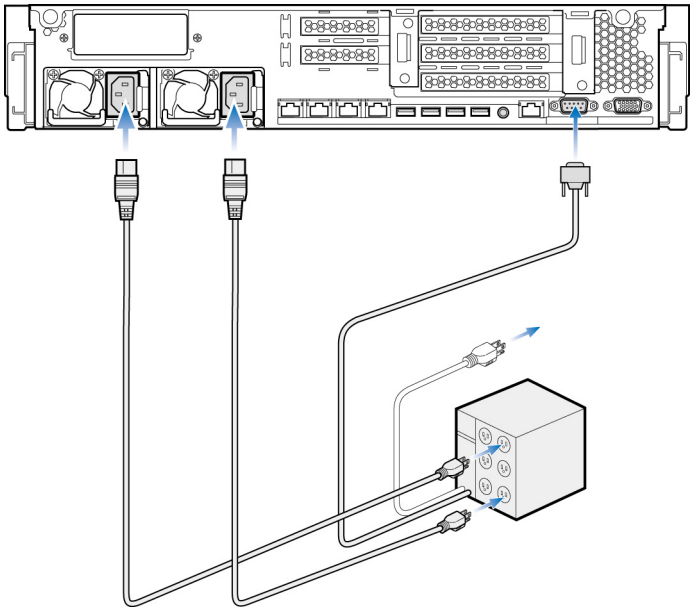


Figure 3-12: Connecting AC cable to UPS

LAN cable

In order to connect the system unit to a network such as a LAN or a WAN, connect a network interface connector on the rear side of the system unit to a switching hub by using a LAN cable.

The system unit has two network interface connectors as standard options.

- Network interface connector 1: Connects to onboard LAN1
- Network interface connector 2: Connects to onboard LAN2
- Network interface connector 3: Connects to onboard LAN3
- Network interface connector 4: Connects to onboard LAN4

The onboard LAN controller of the system unit supports 1000BASE-T/100BASE-TX/10BASE-T. We recommend using enhanced category 5 LAN cables or better.

- When you connect LAN cables to network interface connector, follow the following instructions. If you fail to do so, network interface connectors can be damaged and LAN cables can be damaged or disconnected.
  - Use LAN cables with connectors in compliance with RJ45/ISO8877 standard.
  - Install the LAN cables in such a way that too much stress is not placed on the network interface connectors.
  - When you disconnect a LAN cable, keep pressing the tab on the cable connector and pull out the connector while keeping the connector evenly aligned with the connector on the system unit.
- Connect LAN cables to network interface connectors (include optional LAN mezzanine and LAN card) through a switching HUB. If you connect LAN cables to network interface connectors directly, a network may not link up.

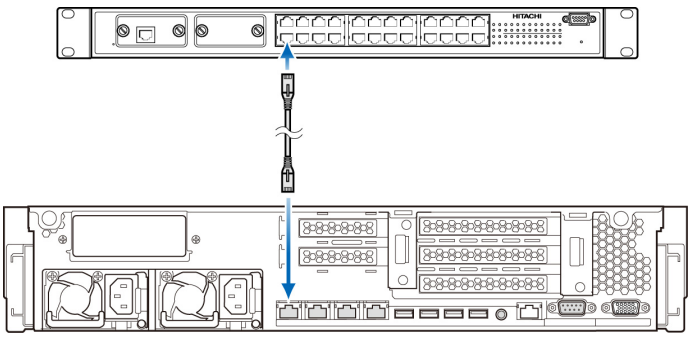


Figure 3-13: Connecting LAN cable

Other external optional devices

When you connect external optional devices other than basic peripherals such as computer display, keyboard, mouse and external DVD-ROM drive to the system unit, see the manual that comes with each external optional device.

If you want to boot from an external DVD-ROM drive, you need change the boot devices priority by system BIOS. For details, see *Hitachi Compute Rack 220S BIOS Guide*.

Removing the system unit

This section describes how to remove the system unit from a rack cabinet.

Unmounting the system unit to the rack cabinet

The following describes the procedure to unmount the system unit to the rack cabinet.

1. Disconnect all the cables from the system unit.

   See Connecting to the system unit on page 3-9.

2. Remove an optional front bezel (AU7706–Y/AU7706-R) if any.

   See Removing a front bezel on page 3-8.

3. Slide out the system unit while pressing the buttons on the inner rails until the inner rails stop.

   Then the inner rails are locked by lock latches (White).

4. Further slide out the system unit while pulling the lock latches (White) and disengage the system unit.

- Lift the front of the system unit slightly when sliding out the system unit. Otherwise, the system unit can interfere with another unit installed below, which may cause those units to be deformed.
- Do not push down the system unit while sliding out the system unit. If you do, the system unit may be deformed.

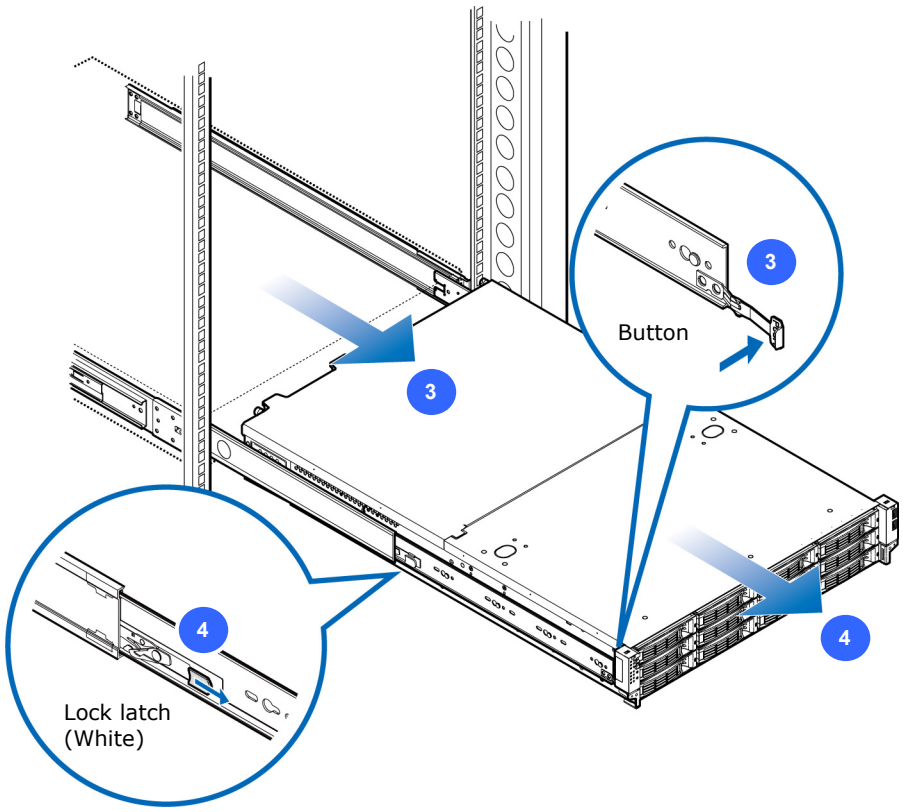


Figure 3-14: Unmounting the system unit from the rack cabinet

Removing the rack rail

The following describes the procedure to remove the rack rails in a rack cabinet.

1. Release the lock lever at the rear of the outer rail by pressing the lever.
2. Remove the guide from the guide hole at the rear of the rack cabinet.

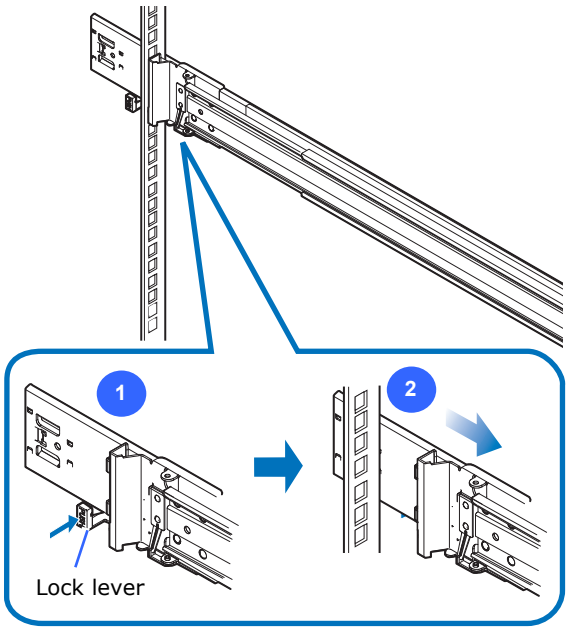


Figure 3-15: Remove the rear side of the outer rail from the rack cabinet

3. Then hold down the lock tab at the front of the outer rail and remove the guide from the guide hole at the front of the rack cabinet.

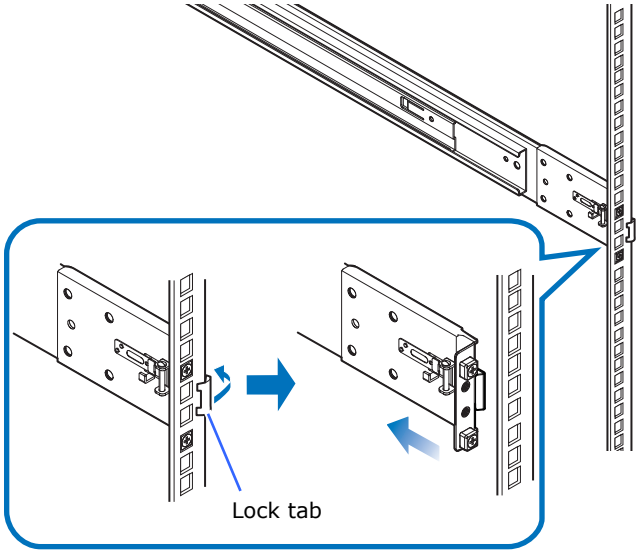


Figure 3-16: Remove the front side of the outer rail from the rack cabinet

4. Repeat with the other slide rail.

4

Powering on/off system unit

This chapter describes procedures to power on/off the system unit.

- ☐ Powering on system unit
- ☐ Powering off system unit
- ☐ Shutting down the power forcibly
- ☐ Terminating an application and reset

Powering on system unit

This section describes the procedures to powering on the system unit.

Before powering on the system unit, make sure that 100VAC or 200VAC, the selection of which is in accordance with the AC cable used, is supplied to the electrical outlets, the electrical outlet box, or a UPS.

- Wait more than 10 seconds to turn on the system unit after turning off the system unit. If the AC power source to the system unit is shut down (for example, a circuit breaker at a switchboard is shut off or AC power from the UPS is shut off by a scheduling function of UPS), wait at least 30 seconds. The system unit may not start up, if you turn on the system unit earlier for each case.
- Wait more than 10 seconds to powering off the system unit after powering on the system unit. After memory check in Power On Self Test (POST) started, do not turn off the power until the operating system (OS) starts. Otherwise the system unit may not start next time.

When an AC cable is connected and the system unit gets supplied with AC power, both SERVICE LEDs on the front side and the rear side of the system blinks for about 60 seconds.

If you press the POWER switch while the SERVICE LEDs are blinking, you have to wait until the blink end to start the system unit.

1. Turn on the peripherals such as a computer display.

Depending on a peripheral, you may need to turn on the peripheral after you turn on the system unit. For details, see the manual of each peripheral device.

2. Press the POWER switch on the front side of the system unit.

If the setting of system BIOS – **Restore AC Power Loss** is Power on, the system unit will be automatically turned on without pressing the POWER switch after the AC power source was recovered.

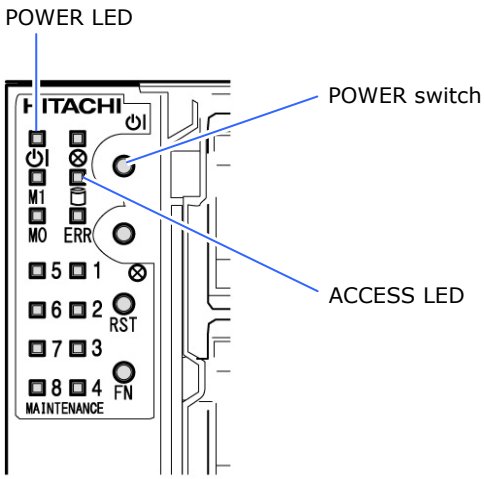


Figure 4-1: Turn on the POWER switch

3. The power for the system unit is turned on.

   The green POWER LED on the front side of the system unit turns on.

- At the first startup after you change the configuration of the system unit, Windows loads new drivers and sets up new services. Because the USB driver is not loaded during this period, you cannot temporarily use a keyboard and a mouse for input.
  If you changed the configuration of the system unit, wait one or two minutes after startup and then use the keyboard or mouse for input.
- Depending on the capacity of the memory boards in the system unit, you may need to wait a couple minutes the initial window will open.

Powering off system unit

This section describes the procedures to powering off the system unit.

1. Confirm that the devices and the peripherals connected to the system are not being accessed.
2. Confirm that the ACCESS LED is OFF.
3. Press the POWER switch on the front side of the system unit.

   The power for the system unit is turned off.

Depending on a peripheral, you may need to turn off the peripheral before you turn off the system unit. For details, see the manual of each peripheral device.

- If the power is automatically turned off when the operating system (OS) is shut down, you do not need to press the POWER switch.
- The power may not be turned off due to cache protection even if you press the POWER switch. In this case, wait until the power will be turned off.
- The fans inside the power supplies of the system unit continue running unless the AC power source is turned off.

4. Turn off the peripherals.

Shutting down the power forcibly

The power may not be turned off even if you press the POWER switch when, for example, the operating system (OS) is not working properly.

In this case, if you press the POWER switch continuously for four seconds or more, you can forcibly turn off the system unit.

Do not perform this operation unless you cannot turn off the power with normal procedure.

After you shut down the power forcibly, the OS or applications may not work properly and integrity of the stored data may be compromised. If this situation happens, set up the OS or applications again or restore the data from the backup data.

Terminating an application and reset

If the system unit freezes while an application is running, you may recover the system unit by terminating the application running on the operating system (OS) forcibly or restarting (resetting) the OS forcibly. For details, see the manual of the OS.

If you use Windows OS, see *Hitachi Compute Rack 220S Windows Installation Guide*.

After you terminate an application forcibly or resetting the OS, the OS or applications may not work properly and integrity of the stored data may be compromised. If this situation happens, set up the OS or applications again or restore the data from the backup data.

5

Specifications

This chapter describes the specifications of the system unit.

- System Unit Specifications

System Unit Specifications

Hitachi Compute Rack 220S

Items		Specifications
Chassis type		Rack type [2U]
Disk type		SAS/SATA RAID (3.5-inch / 2.5-inch)
CPU	Supported CPU (clock speed)	Intel® Xeon® processor(*1) E5-2470 (2.30 GHz) /E5-2440 (2.40 GHz) /E5-2420 (1.90 GHz) E5-2403 (1.80 GHz) /E5-2430L (2 GHz)
	Number of processors [Number of cores]	- Minimum 1 [8] / Maximum 2 [16] (Xeon Processor E5-2470) - Minimum 1 [6] / Maximum 2 [12] (Xeon Processor E5-2440/E5-2420/E5-2430L) - Minimum 1 [4] / Maximum 2 [8] (Xeon Processor E5-2403)
	L1 cache	32 KB + 32 KB per core
	L2 cache	256 KB per core
	L3 cache	- 20 MB (Xeon Processor E5-2470) - 15 MB (Xeon Processor E5-2440/E5-2420/E5-2430L) - 10 MB (Xeon Processor E5-2403)
Chipset		Intel® C600
QuickPath Interconnect (QPI) speed		- 8.00 GT/s (Xeon Processor E5-2470) - 7.20 GT/s (Xeon Processor E5-2440/E5-2420/E5-2430L) - 6.40 GT/s (Xeon Processor E5-2403)
Main memory	Supported DIMM (*2)	- 2048 MB / 4096 MB / 8192 MB / 16384 MB Low-voltage registered DIMM (DDR3 1333 SDRAM) - 2048 MB / 4096 MB / 8192 MB / 16384 MB Wide range registered DIMM(DDR3 1600 SDRAM)
	Error correction	ECC As memory RAS features, SDDC, online spare memory, memory mirroring, lockstep, device tagging are supported.
	Number of slots	6 (1 CPU) / 12 (2 CPUs)
	Maximum memory	96 GB (1 CPU) / 192 GB (2 CPUs)
	Minimum memory	2 GB (1 CPU) / 4 GB (2 CPUs)
Graphics	Accelerator	Emulex Pilot3 [onboard]
	VRAM	32 MB
	Resolutions (Number of colors) (*3)	640 × 480 (16.77 M), 800 × 600 (16.77 M), 1024 × 768 (16.77 M), 1280 × 1024 (16.77 M)

Items				Specifications	
Disk array controller	Controller			LSI SAS 2208	
	Interface			SAS 2.0, SATA 2	
	Cache size			512 MB / 1024MB (without / with cache backup module)	
	RAID levels			RAID 0, 1, 5, 6, 10, JBOD	
	Hot plug			supported	
	Hot spare			supported	
Device	HDD(*4)	Type		3.5-inch	2.5-inch (optional)
		Interface		SATA 2 / SAS 2.0	SAS 2.0
		Rotational Speed		7200 r/min	10000 r/min
		Maximum capacity (internal) (*5)	RAID 0	48 TB (4 TB × 12 HDD)	1800 GB (900 GB × 2 HDD)
			RAID 1	24 TB (4 TB × 2 HDD × 6 RAID)	900 GB (900 GB × 2 HDD)
			RAID 5	44 TB (4 TB × 12 HDD)	-
		Supported capacity		500 GB, 1 TB, 2 TB, 3 TB, 4 TB	300 GB, 450 GB, 600 GB, 900 GB
	SSD(*4)	Type		2.5-inch (optional)	
		Interface		SATA 3	
		Maximum capacity (internal) (*5)	RAID 0	400 GB (200 GB × 2 SSD)	
			RAID 1	200 GB (200 GB × 2 SSD)	
		Supported capacity		200 GB	
Extension storage bay	3.5-inch bay			12	
	2.5-inch bay (Optional)			2	
PCI slot	Slot			- PCI Express 3.0 x 8: 1 - PCI Express 3.0 x 4: 2 - PCI Express 2.0 x 4: 1 - PCI Express 2.0 x 1: 1	
	Vacant slots			5	
Standard interfaces				Display (mini D-SUB 15 pins) × 1, Serial (D-SUB 9 pins)× 1, USB × 6 (front 2, rear 4) (*6)	
	LAN	Controller		- Broadcom BCM5719 × 1 [onboard] - KSZ8051-PHY × 1 [onboard: for remote management]	
		Interface		- Broadcom BCM5719: 1000BASE-T/100BASE-TX/10BASE-T × 4 (RJ-45) - KSZ8051-PHY: 100BASE-TX/10BASE-T × 1(RJ-45)	
		Wake On LAN function		Supported	
Chassis dimensions (*7)				484 (W) × 743 (D) × 87.0 (H) mm	
Mass (*8)				20.2 kg (Maximum 32.7 kg)	
Built-in clock precision				± 120 second / month	

Items		Specifications
Power consumption in operation (*9)		100 VAC: 543 W / 200 VAC: 534 W
Maximum power consumption		100 VAC: 704 W / 200 VAC: 686 W
Noise sound power		55 dB or less (in accordance with ISO 7779) (*10)
Power supply	Voltage	100 VAC / 200 VAC 50 / 60 Hz
	Capacity	800 W
	Type of electrical outlet (Number of AC cables)	Grounded two-pole electrical outlet (1 (Standard) / 2 (When redundancy is enabled))
	Redundant power supply	Supported (1 (Standard) + 1 (Optional)) (hot plug supported)

Notes:

(*1) The following features are supported:
Intel Hyper-Threading Technology (except Xeon processor E5-2403) / Intel Virtualization Technology / Intel 64 / NX (Execute Disable Bit) / Enhanced Intel SpeedStep Technology / Intel Trusted Execution Technology / Intel Turbo Boost Technology (except Xeon processor E5-2403).

(*2) Wide range registered DIMM (DDR3 1600 SDRAM) and Low-voltage registered DIMM cannot be mounted together.

(*3) Actual resolutions / colors vary depending on the monitor used or the limitation of the OS.

(*4) 1 GB equals 10^9 bytes and 1 TB equals 10^{12} bytes when referring to HDD capacity.

(*5) You can assign capacity larger than 2 TB (2199 GB) for the logical drive set as disk array but do not assign capacity larger than 2 TB for the logical drive the OS is installed to. Otherwise the OS cannot create a partition anymore. Use the RAID management utility or the RAID utility to reconstruct the disk arrays and the logical drives.

(*6) If an unsupported USB device is connected, operation of the system unit can be affected. Note that the USB ports are USB 2.0 compliant.

(*7) Including protrusion. As an exception, the cable clamp for an AC cable is not included.

(*8) Including the slide rails and inner rails (3.62 kg) used for installation to a rack cabinet.

(*9) Rough estimate of the power consumption in normal operation.

(*10) We recommend installing the system unit in a dedicated room.
You may feel the noise annoying depending on the installation environment or location. If you install the system unit in an office room, be careful enough to the environment and location.
Note that the rotational speed of the fans is controlled by the temperature inside the system unit.
If the maximum load continues for an extended amount of time at high temperature, or one of the fans gets out of order, the noise level may exceed this standard level. Note also that on startup or reboot, the fans run at full speed and the noise level may exceed this standard level.

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